Natural Heritage & Endangered Species Program
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Spatterdock Darner Dragonfly

Aeshna mutata

State Status: **Endangered**
Federal Status: None

DESCRIPTION OF ADULT: The Spatterdock Darner (also known as the Spring Blue Darner in some earlier references) is a stunning insect in the order Odonata, suborder Anisoptera (the dragonflies), and family Aeshnidae (the darners). The adult is a large dragonfly magnificently colored with intense blues and rich browns. The thorax (winged and legged section behind the head) is mostly brown, with two pale lateral stripes, and the abdomen (the long section behind the thorax) is predominantly brown and marked with sky-blue. The Spatterdock Darner has black legs and transparent to amber-tinged wings. The face is light blue, and the eyes are a brilliant deep blue in mature individuals. The first two abdominal segments are swollen while the third is constricted, giving the insect a slender-waisted appearance. The male has unique terminal appendages (reproductive structures located at the end of the abdomen) which distinguish it from all other dragonflies, although a magnifying lens is needed to see crucial features of these appendages (Needham *et al.* 2000).

Spatterdock Darners range from 2.6 to almost 3 inches (67 - 75 mm) in overall length, with the females averaging somewhat larger. Wingspread ranges from 3.5 to 3.9 inches (90 - 100mm).

SIMILAR SPECIES: Ten species of blue darners (genus *Aeshna*) occur regularly in Massachusetts and the Spatterdock Darner closely resembles many of them in appearance. However, the Spatterdock Darner is the only blue darner in the Northeast in which the eyes and face are rich blue in color (in both sexes). The shape of the lateral thoracic markings, which are relatively straight in the Spatterdock Darner, can be used to determine the species (Nikula *et al.* 2003). The flight period of the Spatterdock Darner is unique among the Massachusetts *Aeshna*: it begins in late May and ends by mid-July, while the other species all fly from mid-summer into the fall. One other species of darner, the Cyrano Darner (*Nasiaeschna pentacantha*) is similar in appearance and flies at the same time as the Spatterdock Darner. The Cyrano Darner also has a blue face and eyes, but has a chunkier thorax and thicker abdomen, and the markings on the side of the thorax are pale green in color and are much thicker and more irregular in shape. In addition, the Cyrano Darner has a projecting forehead creating a crest between the eyes.

The nymphs are relatively long and slender, averaging about 1.4 inches (36 mm) in length when fully grown, and can be distinguished from the other *Aeshna* using characteristics of the labium (lower lip) as per the keys in Walker (1958) and Soltesz (1996).

HABITAT: Typical habitat in Massachusetts seems to be boggy ponds with considerable emergent and floating vegetation. It has also been found in more ephemeral wetlands. As its common name implies, Spatterdock Darners are associated with spatterdock (*Nuphar* spp. - also known as yellow pond lily). However, this plant is absent from some Massachusetts sites where the Spatterdock Darner is found.

The nymphs are aquatic, living among aquatic vegetation and debris of the boggy ponds. The adults inhabit wooded uplands and clearings.

LIFE-HISTORY/BEHAVIOR: Adult Spatterdock Darners typically first appear in late May and are on the wing into early July. Spatterdock Darners are active on sunny days. Males patrol the breeding site, typically flying lengthy beats several feet above the water's surface. When more than one male is present, aggressive interactions are frequent and often end with one male chasing another high over the tree-tops out of sight.

SPATTERDOCK DARNER FLIGHT PERIOD

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

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Female Spatterdock Darners appear at the breeding sites when ready to breed. The appearance of a female generally results in a moment of fevered chaos as one or more males attempt to seize the female. The male uses the claspers at the tip of his abdomen to grab the female behind the eyes. If the female is receptive, she curls her abdomen upward to couple with the male on the underside of his second abdominal segment. Once successfully coupled, the pair flies off high into the nearby woodland to mate. Male dragonflies will mate with as many females as possible; the females may also mate with more than one male.

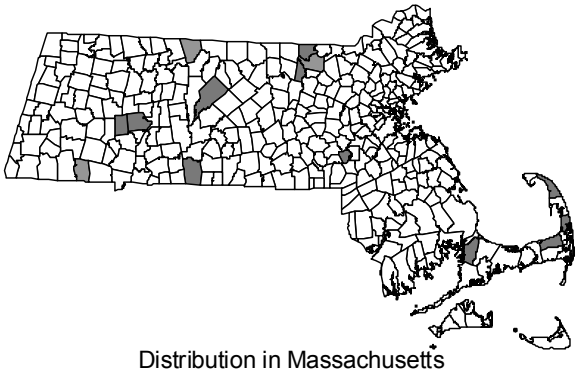
Spatterdock Darner females oviposit (lay eggs) in emergent or aquatic vegetation at the water's surface. The female uses the ovipositor on the underside of her eighth abdominal segment to slice into the stalks of plants where the egg is deposited. Females have been observed ovipositing in the stems of spatterdock (*Nuphar* sp.), pondweed (*Potamogeton* sp.), and the dead stalks of cattails (*Typha* spp.). The number of eggs laid by an individual female Spatterdock Darner is not known, but in many dragonfly species often numbers into the hundreds.

The amount of time required for the development of the eggs and nymphs is also uncertain. The eggs probably hatch within 30 days, but the nymph may take as long as 3-4 years to reach maturity. As a nymph matures, it sloughs off its skin, or exoskeleton, at the end of each stage of growth or instar. The final cast skins, known as exuviae, can be found attached to emergent vegetation where nymphs crawl out to transform into adults. The exuviae can be used for specific identification and are a reliable, useful means for confirming the presence of a breeding population at a site.

The immature dragonflies spend several days or more feeding and maturing in upland areas away from water, often some distance from the breeding site. Some of the Massachusetts records are from such upland sites, well away from wetlands, and it is impossible to determine the origin of these individuals. Spatterdock Darners, like other darners, feed on other aerial insects, which they capture on the wing. When at rest, they hang from vegetation in a vertical position, often high in the trees.

RANGE: The Spatterdock Darner's range extends from southwestern Maine south to Virginia and west to Missouri, Michigan, and Ontario. Throughout much of the species' range, it seems to be scarce and local in occurrence. In New England, Spatterdock Darners have been recorded from southwestern Maine, southern New Hampshire, Massachusetts, Rhode Island, and several sites in Connecticut.

POPULATION STATUS IN MASSACHUSETTS: The Spatterdock Darner appears to be one of the rarer members of its genus in eastern North America, and is an Endangered species in Massachusetts. As with all species listed in Massachusetts, individuals of the species are protected from take (picking, collecting, killing, etc…) and sale under the Massachusetts Endangered Species Act.



Distribution in Massachusetts
1977 - 2002
Based on records in Natural Heritage Database

Prior to 1978, there were only two records for Spatterdock Darner in the state. However, a dramatic increase in the number of records occurred in the 1990s. This is most likely explained by a sharp rise in the level of field work during the same period, rather than an increase in the species' population. The preponderance of records are from Barnstable, Middlesex, Hampshire, and Hampden counties. However, the paucity of records from elsewhere in the state may simply reflect the more limited field work done in those areas. Most records involve just 1-3 individuals, though sizable breeding populations appear to be present at single sites in Hampden and Hampshire counties.

MANAGEMENT RECOMMENDATIONS: Most Spatterdock Darner sites in Massachusetts are small and presumably fragile wetlands. The greatest threat to this species is likely to be the destruction or degradation of these wetlands from development, or the impacts of pollution resulting from inadequate sewage treatment, road run-off, or acidic precipitation on the eggs and nymphs. Water draw-down due to reduction of the water table for human use may also adversely affect Spatterdock Darners.

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